1: Hollis G-5 (ca. 1894-1904) 1905
FL12 Masai FL12

customs of the Masai are both numerous and varied, but comparatively little is known of their language. The following books, which contain either short vocabularies or grammatical notes, are probably all that exist[1].

I. *Vocabulary of the Enguduk Eloikop*, Krapf, Tubingen, 1854.

II. *Vocabulary of the Enguduk Iloigob*, Erhardt, Ludwigsburg, 1857.

III. *Life, Wanderings and Labours in Eastern Africa*, New, London, 1874.

IV. *Nubische Grammatik* (Einleitung), Lepsius, Berlin, 1880.

V. *Massailand-Expedition*, Fischer. (Mittheilungen der geographischen Gesellschaft in Hamburg, 1882-3).

VI. *A Visit to the Masai People*, Last. The Geographical Journal, 1883.

VII. *Die Sprache der Il-Oigob* (die sogenannten Wakuafi und Masai). Grundriss der Sprachwissenschaft (Band III), Müller, Vienna, 1884.

VIII. *Polyglotta Africana orientalis*, Last, London, 1885.

IX. *The Kilima-Njaro Expedition*, Johnston, London, 1886.

X. *Durch Massailand zur Nilquelle*, Baumann, Berlin, 1894.

XI. *Masai Grammar*, Hinde, Cambridge, 1901.

XII. *The Uganda Protectorate*, Johnston, London, 1902.

My endeavour in writing this book has been to place on record some of the thoughts and ideas of the Masai people, before their extinction or their admixture with Bantu elements and contact with civilization renders this an impossibility. The stories, the proverbs, the riddles, the songs, and the account of the customs and beliefs of this interesting people are all given in the words of the relaters themselves.

My thanks are due to Sir C. Eliot for many valuable hints, and for the kindly interest he has shown in my work; to Mr. W. J. Monson for the free translation of the songs and prayers; to Mr. R. J. Stordy and to Saleh bin Ali for the loan of their photographs; and to the Director of the Royal Botanic Gardens, Kew, and to the officials of the Agricultural and Forestry Departments, East Africa Protectorate, for determining the names of the trees and plants.

In conclusion I wish to pay a tribute of the highest praise to the work of the Church Missionary Society in East Africa.

[1] When this was written Merker's book *Die Masai* (Berlin, 1904) had not been published.

4: Sandford C-4, 5 (1918) 1919 FL12 Masai FL12

[P. iii]
[P. iv is blank]

PREFATORY NOTE.

THE administration of the Masai tribe has always been one of the most interesting native problems of the East Africa Protectorate. The Masai occupy a reserve nine million acres in extent, which is at present fully stocked up: if water facilities were improved, not only could the number of cattle be very materially increased, but the reserve could also hold cattle of a better quality bred from imported stock. The potential value of the Masai Reserve as a home for cattle is enormous.

The lessons of the past may help us to solve the problems of the future. With this end in view, Sir Charles Bowring, when administering the Protectorate, instructed Mr. G. R. Sandford to prepare a short History of the administration of the tribe up to date.

The result of Mr. Sandford's researches is the very valuable compilation to which I am glad to be able to attach this foreword. The particulars have been drawn from official records, and the historical portion of the work may be accepted as an authentic summary of past events. Conditions as they existed in October, 1913, together with the steps that were being taken to deal with them, are accurately portrayed, while illustrative maps, compiled by Mr. Sandford himself, are distributed where necessary throughout the text.

The volume forms a valuable addition to the records of the Protectorate.

EDWARD NORTHEY.

Government House, Nairobi,
August 31st, 1918.

5: Maguire G-5 (no date) 1928
FL12 Masai FL12
Kisongo

THE MASAI PENAL CODE

Some Notes on the Recognised Masai Punishments for Crimes, with Examples of Masai Oaths or Ordeals

121 The following notes relate to those punishments of ancient origin still remembered among the Kisongo [1] Masai. Some of the penalties are habitually inflicted up to the present day. Some, as will be obvious from a perusal of the text, have, of necessity, fallen into disuse. They have been written down from the statements of certain Masai Elders of the *'L-aimur* [2] age, and have received the *imprimatur* of the *'L-oibon* Páriť. Páriť [3] has asked me to say that he cannot be responsible for the authenticity of what follows, though he has no doubt that it is correct, but being a comparatively young man of the *'Siaru* [4] age, he has not the knowledge of these things that the Elders have.

121 The notes are brief and unscientific, and were made, primarily, with the object of adding to our knowledge of Masai custom in the matter of criminal offences in view of the recent formation of Native Courts throughout Tanganyika Territory.

'L-oikop: Murder

683 (*a*) If one Masai kills another, all the cattle of the murderer are taken by the relatives of the deceased. A council is then

[1] Kisongo is the Masai name for the southern Masai areas. It includes almost the entire Tanganyika Masai District as constituted to-day. The principal Masai "Districts" included under the name Kisongo are (for the purposes of this article) Mbulu and Kiteto.

[2] Circumcision of 1874, approximately, according to Hollis.

[3] Páriť is a brother of Sikio and Kimelewa, of Kenya. They are all three of the clan of the *ewaliton-nom* or *'L-oibonok*. *Ol-Oonono* (*Lenana*) was Páriť's father, and Páriť is Sikio's brother by a different mother. Páriť came down to Tanganyika in 1903 by his own desire, and at the request of the Tanganyika Masai. He has lived here ever since in the vicinity of Tarime. (C.S.O.; Kilimanjaro; E; 7 & 8).

[4] Circumcision of 1898, approximately, according to Hollis. I think the date of the ceremony was somewhat later among the Masai of Tanganyika.

9:Foxbrooke G-5 (1936-1948) 1948 FL12 Masai FL12
Kisonko

An Administrative Survey of the Masai Social System

By H. A. Foxbrooke

PREFACE.

The accompanying notes do not presume to give a balanced picture of the Masai social system. They were compiled in 1939 when the writer, after 4 years' service in the Masai District of Tanganyika was seconded to study the political system and to submit proposals on administrative reorganisation. These latter are omitted from the present publication, but the chapters on History, the Laibon, the Age Grade System, the Tribal Officials, and Clan and Family matters are presented in hat order and in practically the same form as when originally submitted, and consequently refer to the position as it existed in 1939. This Introduction and the conclusion are being written in 1940.

By reason of its origins this material has a heavy bias on the political side of the social organization, the purely social — birth marriage and death customs — and the socio-economic — the cattle cultus, land usage, etc. — leave a large field of interesting material for future study. It is hoped that one result of the publication of these notes will be to stimulate those at present serving in Masailand in whatever capacity in both Kenya and Tanganyika, to take up these untouched branches of study in addition to correcting, bringing up-to-date and noting local divergences in this and other published material.

The Masai are known, by reputation or repute, to the majority of those into whose hands the present publication will fall. Here it will suffice to say that they are a race of semi-nomadic pastoralists, of Nilo-Hamitic stock, occupying a large area of country on both sides of the Kenya-Tanganyika border. The census due to take place this month will reveal their true numbers, and perhaps the editor of Notes and Records will be in a position to quote an accurate figure before this appears in print. But the whole tribe probably does not exceed 25,000 adult males or 100,000 persons in all.* It has been frequently pointed out by its critics that the tribe occupied more land and has played a more important part in history than is justified by its numbers, but the same remarks apply to many strong-characterised and virile races.

To illustrate this paper some of the numerous photographs which I took during my sojourn in Masailand are reproduced, though they have perhaps suffered through time and inadequate storage; in addition those interested will find that the works marked in the bibliography with an asterisk give an adequate pictorial representation of Masai life. And finally 400 feet of 16 mm. sixt film, kindly edited and 'duped' by the Colonial Film Unit, has been deposited with the Information Officer, Dar-es-Salaam, from whom it may be obtained on loan. Of particular interest are shots

* The Director of Statistics, E.A. High Commission, has kindly supplied the following preliminary estimate figures of the Census enumeration: Total number of Masai in the Masai districts of Kenya and Tanganyika — 187,000, of which 34,000 are males — ed.

12: Fox G-5 (1925-1930) 1930 FL.12 Masai FL.12
Kenya

FURTHER NOTES ON THE MASAI OF KENYA COLONY.

[With Plates XIII-XV.]

By D. Storrs Fox.

Preface.

My excuse for writing the following is that in the capacity of District Officer, Kenya Colony, I have administered the Kenya Masai for periods aggregating rather more than three years between 1925 and 1930. Being able to speak the language fluently, and having observed their life and habits from day to day, I can supply a certain amount of information supplementary to the notes recently published in the *Journal* (pp. 185-209) by Mr. Leakey and the earlier work of Sir A. C. Hollis (*The Masai*, by A. C. Hollis, Clarendon Press, 1905). I have avoided repeating facts already recorded by these two authorities except where I can add to them or correct them.

In the following notes the first part consists mainly of additions to and comments on Mr. Leakey's article. Later on, I have dealt with other matters with which I am conversant. By the Masai I mean the people who comprise the territorial sections enumerated in the age-group table below. There are other tribes sometimes called Masai, *i.e.* the Uasin-Gishu, Arusha, Sambaru Njampa and Ngorongoro, of doubtful origin and divergent customs to whom this article does not refer.

The Masai are a secretive people, suspicious of strangers, and unwilling for the most part to discuss with them their customs. But there live amongst them a number of natives of other tribes such as Kikuyu, who have been adopted by the Masai. Such folk are very ready to expatiate on Masai customs, but their testimony is often misleading because it is only half the truth.

Until recently I had no idea of setting down in writing the facts which I know about the tribe. I made myself acquainted with their language and customs simply because, without such knowledge, I should have been largely unable to appreciate their point of view or make decisions and give advice of value to them.

As there are many things still to learn about the Masai, I have omitted the matters on which my information is as yet insufficiently verified.

Childhood. Games.—Little girls sometimes play with dolls. These are made crudely by their mothers of mud, which they drive. I have seen a little girl dressing her doll with a bit of cloth, giving it milk from a tiny gourd, suckling it at her breast and rocking it to sleep, just as a European child might do. The Masai name for a doll is *Ee-gwai e-narong'op*, which means child of mud. (See Hollis, p. 311.)

14:Orr & Gilks D-4 (no date) 1931 FL12 Masai FL12
Kikuyu FL10

PREFACE.

The Medical Research Council are glad to publish in this series the following report by Dr. J. B. Orr, Director of the Rowett Research Institute at Aberdeen, and Dr. J. L. Gilks, Director of Medical and Sanitary Services in Kenya Colony and Protectorate. The report deals with an investigation into the physique and health of two African tribes, the Masai and the Akikuyu. The information brought forward is of great interest in relation both to general scientific questions of nutrition and to particular problems presented by the native races inhabiting British Colonies in the tropics.

The investigation described was made for the Dietetics Committee of the Committee of Civil Research (now the Economic Advisory Council), and was financed by grants made by the Empire Marketing Board. Publication by the Medical Research Council was recommended by the Committee, in order that the information contained in the report might be made available most effectively to those concerned.

The account of the investigations is here introduced by what is the Sixth Report of the Dietetics Committee. This document gives a history of the work and a survey of the data obtained. Everything of scientific importance contained in the five unpublished interim reports that preceded it, as also in certain technical papers by the several investigators (*see* p. 8), is included in the present publication.

MEDICAL RESEARCH COUNCIL,
38, Old Queen Street,
Westminster, S.W.1.

9th *March*, 1931.

14:Orr & Gilks D-4 (no date) 1931 FL12 Masai FL12
Kikuyu FL10

I.—INTRODUCTION: THE PHYSIQUE AND HEALTH OF TWO AFRICAN TRIBES.

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The Public Health organisation of modern civilised countries, with its system of collecting and analysing data on the incidence of disease, has no parallel among many African native races. Such information as we have regarding these races is derived from records of sickness in native labour on mines or estates, the occasional observations of medical missionaries, and the reports of district medical officers. During the past few years, the expansion of the public medical services in these areas, with the establishment of native hospitals, has added to our information through the official records. But so far these services come in contact with only a small part of the total native population, and we are still left in considerable ignorance as to the general incidence of disease, especially within the native reserves.

The information we have given the impression that the physique of tropical native races is in no way superior, and is frequently much inferior to that in civilised communities, and that, in addition to tropical diseases such as malaria and sleeping sickness, other diseases, which are common to all parts of the world, are as prevalent among native races as among civilised peoples. The following records may be quoted as giving a rough picture of the physique and susceptibility to disease of the East African native.

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The physique of the typical male Kikuyu may be judged from recruiting statistics (Tate, 1917-18). Of the 16,754 men of one district of the Reserve who were called up during 1917 for enrolment in the Carrier Corps, 10,912 were immediately rejected on medical grounds. Following the march of one hundred miles to the depôt at Nairobi, a further 17 per cent. were rejected as physically unfit.

Records of the incidence of disease in native labour on railway construction gives a striking picture of the mortality amongst the adult male population at the period of life of greatest vigour. The records are the more significant that these labour gangs do not constitute a random sample of the population: they have already been subjected to medical examination with elimination of the obviously unfit. Of a labour strength of 16,446 employed on the construction of the Uasin Gishu Railway (Fisher, 1925) in 1923, the death rate was 39·4 per 1,000, and the admissions to hospital during the year were 3,201. Improvement of the hygienic conditions and a change in the diet in the direction of making it more varied and more like that consumed by Europeans, by decreasing the amount of maize and increasing the legumes, green vegetables and meat, was followed by a fall in the death rate. In 1924 (Bondelier) it was 39·0 per 1,000. But even this lower rate is high for selected men medically examined before being accepted for work. In the British

14 Orr & Gilks D-4 (no date) 1931 FL12 Masai FL13
Kikuyu FL15

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army, the body of men in this country most comparable to African contract labour, the death rate in peace time is only about 2 per 1,000.

Observations on general mortality of the population of one of the most reserves have recently been made in the course of an investigation on ankylostomiasis (Annual Medical Report, Kenya Colony, 1927). The following figures show the number of cases of different diseases noted in a "trial survey," including examination of 667 persons, of whom 535 were adults and 132 children :—

Nourishment unsatisfactory	425
Anæmia	570
Pyorrhœa	436
Hæmic murmurs	546
Enlarged spleen (adults)	225
Enlarged spleen (children)	96
Tuberculosis	150
Bilharzia	30
Yaws	446
Syphilis	2
Gonorrhœa	8

Examination of the faeces of 426 of the above was carried out. The results showed :—

Ankylostomes present	344
Ascarides	66
Trichuris	26
Strongyloides	5
Taenia	10
Oxyuris	2

An examination of hospital returns shows the major diseases which are most prevalent. These are pulmonary diseases, ulcers and intestinal diseases. Almost 50 per cent. of deaths in hospitals are due to diseases of the respiratory system, of which pneumonia is probably the most serious, appearing for several years as the chief cause of adult mortality in both Nairobi and Mombasa. Tuberculosis is common, and usually appears as second on the list of causes of adult mortality in the townships. In the reserves, tuberculosis appears to be noted more frequently than it was, but it is not certain whether the disease is increasing or whether the apparent increase is due to extension of the "hospital habit" among the population.

Ulcers of the leg are common and account for much sickness. The cases encountered in the native reserves are frequently of a most severe type, and it is not uncommon to find that the ulcerative process has extended to the bone with resulting osteo-myelitis and the formation of extensive sequestra. Amongst contract labour they are responsible for more loss of time than any other condition. This is shown by the following sickness record for the months March to September, 1924, amongst a labour strength averaging 2,800 on the Thika-Nyeri Railway (Fisher, 1924).

14 Orr & Gilks D-4 (no date) 1931 FL12 Masai FL12
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Analysis of 1,187 Cases of Illness.

No. of cases.	Disease.	Total No. of days in hospital.	Average No. of days per case.
630	Pulmonary	3,043	6·83
383	Diarrhœa and dysentery	2,196	5·57
180	Fever	917	5·39
180	Ulcer	4,034	21·80

This table illustrates the frequency with which intestinal disturbances occur among contract labour. Dysentery and diarrhœa also occur frequently in the reserves. The cause of the dysentery is not clear. It is not commonly associated with the presence of the Entamœba histolytica or of typical Shiga or Flexner bacilli, and it has been noted clinically that a good dietary has a considerable effect in reducing mortality from this cause.

No vital statistics are available. It is believed, however, from observations made in limited areas, that the infantile death rate in the native reserves amounts to between 400 and 500 per 1,000. Records of the cause of death from the native hospitals in Nairobi and Mombasa show that nearly 50 per cent. of infantile deaths are due to pneumonia and broncho-pneumonia.

No information of any kind exists as to the longevity of these tribes. It is, however, a matter of common observation that the women age very early.

Thus, such statistical data as we have bear out the impression of medical officers, with experience of work in the native reserves, that in many tribes the physique of the natives is poor, and the incidence of disease, in addition to malaria, yaws, sleeping sickness and such other diseases as are regarded as being peculiar to the tropics, is high. The poor physique, considered together with the high incidence of pulmonary and intestinal conditions, resistance to which appears to be lowered by deficiencies in the diet (Orr, 1924, 1930), suggests that undernutrition, or malnutrition, or more probably both, may occur to a marked degree amongst native tribes.

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The investigation dealt with in this report was undertaken with the primary object of obtaining more information regarding the dietary customs and incidence of disease in natives in the reserves and on the adequacy of the diets in use in native hospitals and prisons. The main lines of the investigation were as follows :—

(1) A survey of the dietary customs and disease incidence in two tribes, viz., the Akikuyu, a vegetarian tribe, and the Masai, who are largely carnivorous.

(2) A detailed clinical and physiological study of youths and men on native hospital and prison diets.

(3) A special study of the etiology of tropical ulcer.

14:Orr & Gilks D-4 (no date) 1931 FL12 Masai FL12
Kikuyu FL10

K M 125 The information collected directly was supplemented by the replies to two questionnaires issued by the Medical Department to district medical officers, medical missionaries, chiefs of tribes and others interested in the investigation. One questionnaire dealt with the dietary customs of natives and the other with the incidence and etiology of ulcers.

II.—FIELD WORK.

(a) Dietary Customs and Incidence of Disease in the Kikuyu and Masai Reserves.

K M 114 Dr. J. W. Foster was sent out from the Rowett Research Institute to carry out this part of the investigation, and Dr. J. C. J. Callanan, of the Medical Service in Kenya, was specially detailed to work with him for the first five months.

K M 121 262 The two reserves chosen for the investigation were the Kikuyu and Masai, the choice being made on account of the fact that the reserves adjoin while the dietary customs of the tribes are very different, the Akikuyu* being almost exclusively vegetarian and the Masai chiefly carnivorous.

K M 126 [114] The two Reserve areas were visited alternately during a period of over a year and a half, each trip occupying two or three months. Samples of all foodstuffs in common use were collected and despatched to the Rowett Institute for analysis. The samples consisted of articles of diet in the raw state, cooked foods, edible earths, salt substitutes, and natural mineral waters used in cooking.

K M 125 A physical examination was made of 6,349 Kikuyu and 1,548 Masai† adult natives of both sexes and all ages. The examination was made under eighteen heads, including stature, weight, chest, abdomen and calf measurements; presence of anæmia; condition of teeth and gums; general physical and muscular development; strength as indicated by the dynamometer; presence of hernia, splenomegaly; ulcers.

A similar examination was made of 2,500 Kikuyu and 254 Masai children. The special object of this examination was to compare the tribal incidence, during the growth period, of osseous deformities, dental caries, periodontitis, anæmia, and general signs of malnutrition.

The subjects examined for physical condition were taken at random from the healthy section of the community in all parts of the Reserves. Great care was taken to exclude any sick native who presented himself. Apart from this, no selection was made, and the records may be taken as representatives of the average native of the Reserves.

An estimation was made of the diseases prevailing in the two tribes. Hospital returns were analysed, but, as it became apparent that, for

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* The prefix "A" in Akikuyu has a collective sense, the term "Akikuyu" referring to the tribe as a whole, while the term "Kikuyu" has only an adjectival significance.

K Ka [161]

† It should be noted that the estimated populations of the Kikuyu and Masai Reserves at the end of 1929 were respectively 795,934 and 48,547.

[P. 190]

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[Text continues on p. 192]

16: Merker PL12 Maasi PL12

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[For additional information on Merker's theoretical orientation vis à vis the origins of the Maasi, see category 116, pp. 401-466.]

10r Merker--G G-6 (1895-ca.1908) 1910 PL12 Mawai PL12

/Pages i-iv are title and dedication pages./

/1/ **Foreword to the First Edition**

• [2] Advancing culture is more and more rapidly shaping and polishing the customs of the so-called savage peoples. What it takes half of five and sometimes even more thoroughly is precisely what is peculiar to the savage, in which his doings, his thoughts and feelings are most clearly reflected. This is particularly true of those primitive peoples whose customs and views stand in sharp contrast with our principles of civilization and who must start a whole new life if they do not wish to perish. This, of course, applies above all to the Melanesian peoples, and especially to the solitarily dispersed among them, such as the Mawai. Thus there is ever more urgently approaching us Europeans who live among these peoples the task of completing and perfecting our knowledge about them before it is too late.

[3] Besides this scientific goal, the investigation of the natives of our colonies also pursues a practical purpose. The time during which we forced recognition of German rule with weapons and had to lead the natives, who, through their almost uninterrupted expeditions of war and raiding against one another, devastated the land and reduced the population, to peace by force are almost over. In serious pacifying work they must now be educated toward what, for their own advantages and those of their country, they are to become. Where and how the educator must work, enlightening and striving, to attain this goal, a knowledge of the thoughts and feelings, of the character and customs of the people, will teach him.

In the present study I am presenting only what I was able to [4] establish with certainty. In gathering these contents I observed the principle of letting the people talk freely and only then asking direct questions, when it was a matter of checking the accuracy of what had already been noted. I am convinced that only this procedure -- albeit very time-consuming and heavy for the traveling investigator often enough impossible -- can produce results that are uninfluenced by the thinking of the Europeans

/v cont./

124 investigators and therefore reflect, unclouded, the feelings of the savage.

128 Concerning the origin of the first two chapters of the fourth part, the tradition from primitive times and a comparative study of the /vi/ traditions of the Masai and the Israelites, etc., it should also be said that I first completed the former, in the form in which it appears, as a result of my research, and only afterwards did I approach a comparison with the traditions of the Bible. As alluring as it seemed to compare immediately what was told me by the Masai with Biblical accounts, I nevertheless had to resist this temptation, in order to avoid letting myself be unconsciously influenced in the manner of putting the questions in the checking. It may be mentioned further that it was not until the 114 123 fifth year after the beginning of the work on the present study 173 that I came across the traditions from ancient times. That is, these are by no means common on people's lips, but are handed down in certain families, so that even in the larger Masai settlements one finds only very few old men who can relate them in detail. But even these few tell the investigator about them only when they know him intimately and know that he also knows them and their psyche intimately. Only when I had gone so far that [129] the people seriously discussed the question as to whether I might not have been one of them, perhaps from the time of their residence in their original homeland, did I learn about these traditions. Yet it still took one and a half years before I had searched out what is presented in the first chapter of the fourth part. I mention this here so that other investigators who turn their attention to the Masai in other regions may not allow themselves to become discouraged if their efforts remain for a long time without the hoped-for success.

128 In the second chapter of the same part I present, among other things, a series of conjectures -- not unfounded, I believe -- which make absolutely no claim of incontestable correctness. Although this already clearly follows from the wording, it may be expressly pointed out here, especially for those who have some- [131] thing to find fault with in everything. I probably hardly need

/vi cont./

128 to emphasize that nothing was further from my mind than to want
121 to meddle in the work of the theologians and the Assyriologists. Rather, I merely put myself in the position of the expert on the Masai and a few other primitive peoples neighboring them, while I collected the quoted Biblical passages, without making a strained interpretation of them, just as they clearly stand in the Pentateuch to be read by everyone.

128 Since the main content of the two chapters is as new as it is unexpected, and since, furthermore, modern Bible research, on the basis of the Babylonian excavations, is not exactly free from very contestable interpretations, an obvious thought was that the results set down in those chapters might raise the suspicion that speculations could also have crept in here for me. I therefore had my results checked and for this purpose handed over what is presented by me in the first chapter to the linguist, Herr Jos. Deeg, staying here at the time, who commands an extensive knowledge of the language and the thought of the Masai. After the examination undertaken by him, Herr Deeg wrote me

/vii/ "It is a pleasure for me to be able to inform you how closely the material collected by you coincides with the statements of the Masai whom I questioned most exhaustively -- and, to be sure, about all the mythological and etymological problems occurring in your work. I have examined your research analytically and synthetically (the latter by casual mentions of mythological names and later by detailed questioning in conversations with the Masai), and I was surprised by the agreement of the statements of the Masai with your results.

"I value this personally all the more since I know how much understanding for the way of thinking of the Masai, how much perseverance, is required and how much confidence on the part of the Masai is presupposed to obtain correct answers at all."

/4 cont./

174 142 The Semites are tall, slim figures with agreeable, finely chiseled facial features, narrow, often large, but not unhandsome noses, and small, not rarely actually pretty feet and hands.

000 Among the present-day Jews the pure Semite type is probably not frequently represented. The Jews of Aden seem to me to exhibit it still at its purest. On the other hand, the majority of the present-day Jews show more or less clearly /h/ characteristic features of the Hittite race, of whom we know that one of the tribes affiliated with them, the Hittani, formed a mighty realm as early as the beginning of the second millennium, the boundaries of which extended south as far as the Lebanon, and which may earlier have already sent ahead swarms of people to the south. About the fate of these forerunners neither Egyptian or Assyrian accounts nor their own monuments or inscriptions give us information, so that for the present we probably may assume that they merged with foreign peoples -- of the Semite race -- whereby they passed on to them their unhandsome somatic characteristics. We know the latter in their original state only from the monuments left to us. According to them, the Hittite type is characterized by markedly brachycephalic heads, dark hair, dark eyes, large hooked, fleshy noses, a markedly receding forehead, prominent cheekbones, large bones, and, conditioned by that, a heavy bodily build.

174 142 Now we find the somatic characteristics ascribed above to the Semites represented neither in each blond nor their totality in the majority of the blond. Rather, the latter shows the above type in a more or less coarsened form, which, nevertheless, a practiced eye recognizes without difficulty as Semitic and is able to distinguish from that of the Nigrito-Semitic or Semito-Nigritic colored peoples and which even the novice will not take as "Negroish."

174 121 May it already be said here in advance that I regard the blond as descendants of those somatic Semite peoples who belonged to the pastoral tribes of the most ancient Hebrews. I believe I have proved this surmise in the following -- especially in the fourth part of the present study.

1b Meiber--302 G-6 (1895-ca.1908) 1910 PLS2 Masai PLS2 4

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/3339/ Third Part

I.

The Wandorobo of the three branches of the Masai people.

The customs of the Wakuafi are in general identical with those of the Masai, and where a slight difference appears in one or another of their colonies, it is to be traced back solely to the influence of the neighboring sedentary Negro tribes. Such deviations are therefore not peculiar to the Masai people as a whole, and a discussion of them would go beyond the compass of the present study. On the other hand, it is necessary to go into more detail on the customs and practice of the Wandorobo belonging to the Masai people, who, in their tiniest enclaves, have maintained themselves quite without foreign influence (1).

1. With the exception of such by the Taruga, a tribe anthropologically very close to the Masai people.

and to present the differences shown by a comparison with the customs of the Masai, as well as to substantiate the correspondences in the main points.

We have seen that members of all three branches of the Masai people fall under this name (2).

2. In what follows nothing will be said about the Wandorobo not belonging to the Masai people, who are men, mixed with Taruga and Masai, as remnants of an extinct Semitic people -- who embraced the sun cult.

The Asá stem from the oldest epoch, the El still from the middle one, and the El gamunek from the most recent one (3).

3. The other designations with which the Wandorobo of the individual districts name themselves have geographical meaning.

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/344 cont./

IV.

000 The future of the Ideal People. -- Weighing the effect of the people-preserving and people-destroying factors. -- Polygamy. -- Nutrition. -- Fertility. -- Child mortality. -- Free love. -- Organization. -- Wars. -- Epidemics. -- National pride. -- Clash of the culture of the Ideal with that of the Europeans. -- The incompatability of the two hurts the Ideal. -- Harmful consequences of the improvement. -- Difficulty of becoming sedentary.

121 In order to make a prognosis about the future of the Ideal people it seems necessary, first of all, to weigh the people-preserving and people-destroying factors established in the people, in its character and customs, and then to observe the phenomena that appear when the Ideal meet the Europeans. We have many examples of the fact that polygamy does not promote an increase in the population to the extent that monogamy does as a rule. As the reason for this phenomenon one finds an accumulation of wives in the hands of the wealthy, and, as a consequence of that, celibacy for lack of women among very many of the less well-to-do and among the poor. It is obvious that under such circumstances polygamy leaves very many women neglected. But it is different among the Ideal. So here there is such a surplus of women -- perhaps in part again as a result of polygamy -- that no man remains celibate, in fact the possession of only one woman is an exception. Hand in hand with this goes the not so unequal distribution of property; in practice there are scarcely any poor people. Another reason to which /122/ the decline in population among many polygamous peoples is attributed is that polygamous marriages as a rule are relatively passive in children from monogamous ones. This objection is not to be taken into consideration here either, for we have seen that the fertility of the Ideal women is very great. Yet, in order fully to consider the polygamy of the Ideal in its economic effect, we must observe the milieu in which it exists. The polygamous household of the Ideal may be compared to a stock company, to which the property, theoretically belonging solely to the house father belongs in practice. The house father is the chief

Lib Mother--47% G-4 (1890-ca.1908) 1910 FL13 Masai FL13

/347 cont./

132 caused the Masai people in the period before the occupation of the
731 country by Europeans. I have no reliable observations made by myself
233 or by Europeans. Such can scarcely exist, for at that time the Masai were a feared power that every caravan liked to avoid. I am therefore relying on the statements of old men. According to their recollection, the epidemics were never capable of producing actual famine. As soon as the beginning of an epidemic was observed, the Masai fled in wild flight with the herds, leaving the sick animals lying along the way. Half the herd at most is supposed to have succumbed. If one considers the size of the herds at that time, one understands that the surviving part could always still furnish sufficient milk and meat. Furthermore, the war expeditions soon brought substitutes for the fallen animals and thus acted to preserve prosperity (1).

(921)

1. It is to be inserted here that empirically [illegible] epidemics caused few losses for the sedentary Negro practicing animal husbandry along with agriculture. This is probably chiefly due to the fact that he calls only very few head his own and keeps these in his hut, which is far from the next one. Though that the Masai were able to replenish their depleted herds quickly and easily.

117 Finally, the Masai's profound contempt for the surrounding Negro
116 tribes was also favorable for the preservation of the people. It kept the people free of foreign elements, which here would only have resulted in a degeneration of the race.

• 121 The fable that primitive peoples would have continued to develop
177 peacefully and favorably if Europeans, with their corruption, had not disturbingly interfered has long been recognized as such. On the other hand, however, it remains an /349/ undeniable fact that these peoples decline upon contact with the higher culture, and that many even disappear as a people. The reason for this phenomenon lies in the fact that these peoples have already been living on an unhealthy basis and have owed their preservation to causes that we designate as

1N Meier--471 G-S (1895-ca.1910) 1931 FLIS Masai FLIS

/948 cont./

illegal and immoral, because they run contrary to our consciousness of justice and our Christian morality, and which came to arise in the economic field exploitation in the crassest sense of the word. Now while every state that occupies a savage country has the duty to appear as promoter and guardian of justice and morality and at the same time to promote economic development by guiding production along the paths of our modern principles, along with that it may not also overturn the foundation pillars on which the existence of a primitive people rests.

These in plague-ridden Africa the Masai largely owe their existence as a nomadic people, whose only resource lies in its livestock holdings, to the fact that they can always replace their losses by expeditions of war and plunder. As soon as the possibility of such expeditions is taken away from them, or at least very much reduced, through the erection of military stations that grant protection to the victims of the Masai, there must naturally arise a situation in which a gradually increasing weakening of the vitality of a people takes place. What was formerly to their advantage, their war lust and the cowardice of the Negroes, now becomes fatal for them. Both drive them to raiding expeditions again and again. In order to avoid the punishment deserved for that, they retreat into regions that they formerly avoided as harmful to the health for human beings and livestock, or on account of inferior pastures. If the Masai, when they came under the influence of the European occupation, had still been the strong people of fifty years ago, they might perhaps, after the example of other primitive peoples, have carried from it even though a marked, nevertheless only a temporary weakening in the meeting with the higher culture, and then gradually recovered again when they had become ready for its advantages. But we found the Masai already in a condition that looked very much like ruin. The livestock epidemics around the year 1890, which, not locally restricted, had afflicted the herds of all the Masai to such an extent that actually only miserable remnants were left, had produced a general and extraordinarily severe famine. Hundreds of thousands of Masai, especially men and boys, fell victim to it, and in the year 1895 the author still found the corpses around Kilimandscharo appearing in places as though they

19: Talbot K-4,5 (1956-1962)1964 FL12 Maasai FL12

PREFACE

• 121 Grasslands cover much of the earth's land area. They occur on many soil types and in several climatic zones. Some are open prairie or steppe and others include woody growth ranging from scattered bushes to open woodland. Grasslands are classified in many ways. Foresters classify them from the standpoint of the woody vegetation they contain, range specialists from the grasses, and zoologists from the animal life. The unifying factor is the grass cover. It, however, is only one of the interrelated factors, which include other vegetation, animal life, climate, fire, man and soils, which together form the grassland ecosystems.

Grasslands and their edges have supported the most abundant and varied populations of larger wild animals found on each continent. They also provide rich grazing land for domestic livestock and many are suitable for other types of agriculture. As the human population has expanded, grasslands have been among the first -- and most thoroughly -- exploited areas. Although grasslands remain, the former grassland ecosystems have almost wholly disappeared. The two principal factors involved in this change have been removal of the animals from the former ecosystems, and

19: Talbot E-4,5 (1956-1962)1964 FL12 Miami FL12

• 121 modification of the environment.

The larger fauna of grassland ecosystems normally included both ungulates and predators. The larger predators (Canidae, Felidae, and Felidae) competed directly with man for both wild and domestic ungulates, and some of them were also a threat to man himself. Consequently they have been hunted intensively throughout history. The earliest documentated extermination is that of the European lion (Panthera leo subsp.) in A.D. 80-100, and over half of the species of mammals exterminated in historical times in Africa, Asia, Europe, and North America have been larger predators (Thomas, 1948).

The larger grassland ungulates required extensive feeding grounds, thereby competing with man and his domestic livestock, and they were a source of food and other animal products useful to man. Therefore these animals as well as their predators, were subjected to early and intensive pressure from hunting and habitat alteration. In America, for example, between roughly 1870 and 1890 the American bison (Bison bison) was reduced from a population estimated in the millions to about 1,000 animals (Allen, 1942). About 40 per cent of the total mammal species exterminated in Asia, Europe, Africa and North America were these larger ungulates

• 121 (Harper, op. cit.)

Other components of the former grassland ecosystems have also been affected. Maintenance of such ecosystems with their complete populations required large areas. Increasing human land use has left few significant areas of grassland undisturbed. As Darling (1964) has emphasized, most of the wild lands of the world have been significantly modified by domestic livestock. Changes in the fire regime, diversion of water supplies, cultivation, and other human activities have affected the vegetation, soils, and water as well as the other component parts of the grassland ecosystems.

As a result it is rare to find an example of the former grassland ecosystems with its fauna intact anywhere in the world. There is a large body of scientific information about watering, modified, and other managed grasslands, but there is very little such information on the former, complete grassland ecosystems. Study of such wild situations would provide information necessary for effective management of the areas themselves, but possibly of greater significance, such information might aid in understanding more about the ecological processes, past and present, in non-modified grasslands in other parts of the world.

19: Talbot E-4,5 (1956-1962)1964 FL.12 Manni FL.12

[2] This paper describes and analyses the ecology of such a cold grassland ecosystem.

19: Talbot K-4,5 (1956-1962)1964 FL12 Masai FL12

08

INTRODUCTION

Within the past century the grassland ecosystems of Africa have been as much altered as those of the rest of the world. The assemblages of plains wildlife of which Roosevelt (1910) wrote in such wonder have now almost disappeared. One area, however, has remained largely unaffected by "progress."

The Serengeti-Mara region covers some 30,000 square miles of open or wooded plains land, rolling hills and flat pediplex, lying across the Kenya-Tanganyika border just east of Lake Victoria. Most of the region lies in Western Kenya, and much of the part outside the Masai land unit is in Tanganyika's Serengeti National Park.

Topographically Western Kenya is well protected. The Great Rift Valley forms the eastern boundary of this region, and on the south the Rift plus the Nguruman Highlands provide a boundary the north is protected by the Nyanzian Escarpment, and on the west the Kavirondo Escarpment and Lake Victoria form a discontinuous but effective boundary (Fig. 1).

The Masai tribe has provided the other major protection. Before the White Man arrived -- but only just

19: Talbot K-4,5 (1956-1962)1964 FL12 Masai FL12

[24] before -- the Masai tribe occupied what is now Western Kenya[illegible] by conquering and evicting the previous [illegible] residents (Ehret, 1971). The Masai were a fierce and warlike people. Once they had taken over that country no one seriously disputed it with them.

In the early 1900's through the Government of Kenya the Masai made a treaty directly with the Queen of England. This involved re-settling a segment of the Kenya Masai, but the long term effect was to put the Kenya Masai in a privileged position relative to the other tribes -- who did not have such a treaty -- and to give them a degree of autonomy virtually unknown in other parts of Kenya. Because of their remote location and the nature of the topographic [illegible], the Masai in the Tanganyika portion of Western Rwanda also maintained a large degree of autonomy. Aided by these circumstances, the extremely conservative western Masai have kept largely to themselves, and to an extraordinary degree the modern world has gone on around them, instead of over them and through their country.

My first visit to the Serengeti-Mara Region was in 1958. I had been assigned to carry out a brief ecological reconnaissance of the Serengeti National Park under the sponsorship of the Wildlife Management Institute and the American Committee for International Wild Life Protection (Talbot, 1958).

In 1954 and '55 I had traveled through other parts of Africa, the Middle East, and southern Asia (Talbot, 1960a) working as Staff Biologist for the International Union for the Protection of Nature (now International Union for Conservation of Nature and Natural Resources). Many of the areas I visited were arid or semi arid steppe or desert lands with impoverished vegetation and soil, and little of any wild life. Middle Watershed times many of these areas had supported grassland with grassland wildlife. But these grasslands were history, and little or no direct evidence remained of the processes that operated to and maintained the former grassland ecosystems in these vast areas. Even in South America in spite of the voluminous writings about the American Prairie with its buffaloes, relatively little scientific information is available on its ecology. Therefore a look at an undisturbed grassland ecosystem anywhere in the world would be much like a look back into history.

Western Rangeland provides this experience.

When I entered the region in 1956 I came from the south. My first view of the Serengeti Plain was from the Ngorongoro Highlands. From the foot of the mountain slopes, 2,000 feet below the level expanse of the plain stretched to the far horizons, unbroken except by occasional low hills and scattered granite kopjes.

11 Acacia trees fell[illegible] autoscourses a circle way into the plain, then gave way to open grassland. Later, driving across the center of the plain, the grassland appeared endless and the only landmarks were the peaks of the Ngorongoro Highlands floating above the heat haze 50 miles behind. In one place the plain was empty and dry. A few miles further on rain had fallen and the grassland was green and alive with herds of antelopes and zebras with their attendant predators and scavengers. Watching this scene I felt that I was looking back into history. The heat-heavy wildebeests could have been blues on the American Prairies. Zebras and gazelles, nervously watching a lion, could have been their nearly extinct relatives on the Eyrian Plains.

12 When I left the Serengeti in 1958 it was with the firm intent to learn all I could about this place of living history. Subsequent search for reference materials in Europe, England, and North America showed that there was very little known about the area. In fact there were very few scientific data applying to any phase of the East African grassland ecosystems. It appeared that the Serengeti-Mara Region was an almost virgin field for ecological research. The possibilities were tremendously exciting.

19: Talbot K-4,5 (1956-1962)1964 FL12 Masai FL12

FL2.2 FL9 Three years later, in June, 1959, I was fortunate enough to return to East Africa with my wife to carry out a study of the Serengeti-Mara Region. This visit was initiated under the Foreign Field Research Program of the National Academy of Sciences-National Research Council and subsequent extensions were made possible by the New York Zoological Society and the Government of Kenya.

In the process of this study I have spent 34 months in East Africa: January through March, 1956; June 1958 to December 1961; and March into May, 1962. Most of this time, about 30 months, was spent in field research. My wife was with me throughout the major period of field research, from June 1959 through December, 1961.

FL1 The objectives of the study were to define, analyze and explain as many as possible of the interrelationships between the various species of wild animals, the vegetation, soils, climate, and the Masai with their livestock.-- i.e. to describe the ecosystem and to define the roles of its component parts.

To avoid too great dispersion of our efforts in wildlife research, we decided to concentrate our initial efforts on one important species. From the standpoints of biomass, migrations, predation, contact with man, and

19: Talbot K-4,5 (1956-1962)1964 FL12 Masai FL12

• 124 impact on the landscape, the Western White-Bearded Wildebeest (Connochaetes taurinus hecki) appeared to be the most important single species in the plainsland complex. Initial study of this species promised to yield more information of importance to the whole plainsland complex than would the study of any other species.

128 When we returned to California and began compiling the field data we found voluminous material on the wildebeests and on many of the associated species as well. . . . . It was clearly not within the scope or purpose of the present paper to include all the detailed and extensive wildlife data. Consequently, these data are presented below essentially in summary form but in as much detail as is required to accomplish the purpose of this work. More detailed wildlife studies are being presented elsewhere (Talbot and Talbot, 1963b).

121 This paper, then, presents what I have learned about the ecology of Western Masailand. It is essentially a description and analysis of a relic grassland ecosystem,

19: Talbot K-4,5 (1956-1962)1964 FL12 Masai FL12

Serengeti Plain of Tanganyika and the Mara Plains of Kenya. The region includes these areas, plus the homologous habitat between and around them, and covers around 10,000 square miles.

The study area included the plains region and its surroundings in order to define the boundaries of the ecological unit. The total area studied covered roughly 25,000 square miles.

I have used the term grassland in a very broad sense. Within the climatic and edaphic ranges of grass (which includes much of the world), virtually all areas are grasslands or potential grasslands. Grasses and associated forbs provide the larger part both of the food for the wild and domestic grassland animals, and of the fuel for the fires. By manipulation of fire, grazing, and other factors the grass composition and vegetation physiognomy of a given area may be altered considerably; but within that area the maximum biological productivity appears to be achieved by a given combination of grasses. This combination represents a response to the various factors in the ecosystem, and it is constant in a given area, while varying from area to area, as do various factors in the ecosystem. Themeda triandra is the dominant grass of some grassland ecosystems in

19: Talbot E-4,5 (1954-1962)1964 FL12 Masai FL12

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(5) East Africa, while various species of Pennisetum are dominant in those of other areas. Trapp (1960) classified and mapped the grassland and potential grassland types in East Africa essentially on this basis, as did Bothma in mapping the grass cover of Southern Rhodesia (1957) and the whole of Africa (1966).

(12) In this work I am using the term association- defined by Rice (1951), as "an ecologic community together with its habitat."

Where physiognomic descriptions are necessary, I have used those standardized by the Scientific Council for Africa South of the Sahara (1954).

VEGETATIONS OF WESTERN AUSTRALIA

FL:1 4:3 Between the deserts, tropical rain forests, and mountain areas in Africa there are broad belts of savanna, stages of gradual grasslands. These belts were mapped closely by Shantz and Marbut in 1923, and more recently by Bellamy (1960). In general terms, one belt crosses northern Africa passing between the Sahara and the rain forests of the Congo Basin and the lands adjoining the Gulf of Guinea. Another belt crosses south of the Congo Basin and north of the Kalahari Desert. A third belt runs along the east coast of Africa from the Union of South Africa north to the Sahara. The three belts are more or less continuous, pointing to the region of East Africa. Woodland is in the center of this junction area.

FL:1 4:37 4:34 Tall grass savanna, dominated by grasses of tall grasses such as Hyparrhenia, occurs patchily along the outer edge of the northern belt. When the grasses in this type of savanna are low and sprouting they can provide forage for many ungulates. But when they grow tall and coarse only a few animals, such as buffalo[1]

(1) For the scientific names of the mammals of Western Rhodesia see below, the chapter on Wildlife.

and elephant can see them. Therefore, where this type is very extensive, the richness of wild ungulates is apparent to relatively low. Much of this type of savanna is derived from forest lands originally cleared for cultivation (Bartlett, 1960). This tall-grass savanna is not represented in Rwanda.

Tall and short grass steppes and savannas are found throughout the African grassland belts, and all are represented in Rwanda. These areas provide grazing grazing of high quality. In eastern Africa (East Africa and the eastern Congo) these areas support the highest known biomasses of wild ungulates in the world (Bourlière, 1963; Talbot and Talbot, 1963b).

Therefore, the grassland ecosystems of Rwanda are typical of the most productive such ecosystems in Africa. As noted above, however, few such ecosystems remain in essentially undisturbed form. Most are modified in some degree. Eastern Rwanda is an outstanding exception.

Much of Eastern Rwanda is above 5,000 feet elevation, while the bulk of Eastern Rwanda lies 1,000 to 2,000 feet lower. Allowing a three degree F.

to most kinds of life, and certainly a barrier to normal wildebeest movements. If this area were less deteriorated in previous times, it probably would have been the only point of contact between the eastern and western races of wildebeest. The Roosevelt collections from the Sonee area, however, would indicate that there had not been significant mixing of the races there, implying that any recent contact would have been on a small scale and any significant connection had been in the far past.

The wildebeests remain in the northern area of the Rift. There are fenced ranches now south of Lake Naivasha and in the Rift adjoining the Sonee area. The remaining wild animals (kongonis, gazelles, etc.) are hunted on some of these ranches as food for labor. It appears that after the former wildebeest population of this area became isolated from the populations farther west (through Masai occupancy in the Kaputei area) it was gradually hunted out. Kongonis and Thomson's gazelles are still found in this area.

Summary

Masailand is centrally located in the system of grassland belts of Africa. The grassland ecosystems of Masailand are typical of the most biologically productive

and most widespread such ecosystems of Africa. While most African grassland ecosystems, including those of Eastern Rwanda, have been modified by changes in human activities, those in Eastern Rwanda have remained largely undisturbed.

Although separated by the Rift, Eastern and Western Rwanda were ecologically identical when the first white man arrived less than a century ago. Therefore these two land units provide the "before" and "after" examples, the natural situation and the modified one. From this situation one may describe the factors in operation in the undisturbed ecosystem, those in the disturbed situation, the nature of the changes and the factors involved, and the rates of change.

The ecological and topographical barriers around Eastern Rwanda are sufficiently effective that the boundaries of the ecological unit appear to have been essentially the same since prehistoric times.

The study area, therefore, presents an opportunity to study as nearly an undisturbed primitive grassland ecosystem as it is possible to find.

19: Talbot E-4,9 (1954-1962)1964 FL12 Masai FL12

THE MASAI

Introduction

The Masai have been a key factor in the evolution and human survival of the pastoralist grassland ecosystems of Eastern Kenya/Tanzania. Through their flocks and livestock they are also one of the principal components of the ecosystem. Although there are extensive writings on the Masai there have been very few intensive studies. Most writings are the observations of government officers assigned to Masailand or of missionaries. The general outline of Masai history appears fairly well known, but we found many conflicting ideas and surprisingly little precise information on these interesting people at present. Visiting anthropologists and ecologists have given us detailed and dramatic descriptions of Masai land use and ways of life. These descriptions often conflicted with one another and often were totally at variance with the conditions we had observed living near the Masai for over two years. It appears to us that there are two basic reasons for this situation:

In the first place, most people who deal with the Masai become strongly partisan about them. There is something of the Lawrencesque "Noble Savage" there about the Masai. They were and are warriors (Fig. 31)

TEXT CONTINUED ON PAGE 97 1

[19] Consequently one must specify which Masai he is speaking of, where, and when it is not valid to generalize about "the Masai."

History

[21] Due to the ecological factor, therefore knowledge of human history of an area is basic to understanding of its ecological history. For this reason I have gone into the history of the Masai in some detail.

[24] Before 1850: The early history of the Masai has been discussed by a number of writers. Among the important works are those by Foukouske (1948, 1958), Gomez (1845), Gomez (1854, 1857), Melillo (1905), Lenkey (1938), Peters (1891), Sanford (1919), Stern (1941), and Thomson (1885). The following summary is drawn from these writings.

[104] The Masai are considered to be of Nilo-Hamitic stock. It is believed that about 400 years ago they occupied a lowland country north and west of Lake Rudolph in northern Kenya. According to their own traditions they (subsequently) occupied a country called Disoo which must have been the Rift Valley between Lake Rudolph and the Kenya Highlands. This area lies about

Note of life

Introduction and Methods: Customs and mode of life of the Hopi have been described and discussed in some detail by Fischer (1925), Parsons (1924, 1937), Simmons (1942a), Grant (1956, 1957), Hopkins (1905), Washington (1950), Lowrey (1939), Beaglehole (1936), Goodwin (1938), Simms (1903). Thompson (1929), and Bates (1938). There are also scattered observations on the Hopi in the voluminous writings of travelers, collectors, and explorers such as Bourke (1884), Mindeleff (1891), and Peters (1891). A further group of writers such as Gardner (1905) have published autobiographical and other eyewitness accounts of the Hopi.

The purpose of this section is not to describe in exhaustive detail the customs and ways of life of the Hopi, but rather to discuss briefly and chronologically the changes in the mode of life of the Hopi in the study area, so as to affect the ecosystem.

Sources of Information: It is extremely difficult to obtain accurate, unbiased information about the Hopi. As discussed above, most white persons who are associated with the Hopi are strongly biased for or against them. Because of traditional or present ruling most factions of other tribes feel strongly about them. Additionally, "city" factions and those with overseas

• (1) Educationists usually regard them as savages and an embarrassment to the advancement of their country. Intentionally or otherwise, information from such sources is very likely to be biased.

(2) It is often difficult to get accurate information about the Masai from the Masai themselves. Being ultra-conservative and suspicious, the Masai appear to regard with mistrust anyone who is potentially interested in them or their livestock, and anyone in government. Their answers are affected by this attitude.

(3) Interpreters are another, often-unrecognized source of misinformation even for the objective investigator. Whether the interpreter is a Masai or is from another tribe his interpretation may be affected by the factors discussed above. Interpreters frequently "interpret" what they think will please the questioner out of politeness and a desire to please. Occasionally interpreters misinterpret for other reasons. When the language interpreted was Swahili which I understood I have heard interpreters misinterpret when the true answer would have involved the interpreter in more work or an arduous journey. Another good example is the African who interpreted for an American anthropologist who spent several months living with the Masai, but did not learn

19: Talbot K-4.5 (1954-1962)1964 FL12 Maasai FL12

4/126

Some migrations involve quite short distances while others cover hundreds of miles. Most movements of the buffaloes appear limited under twenty miles; Thomson's gazelles 30 to 50 miles, and elands considerably further. One marked bull traveled a distance of something over 120 miles. Wildebeests may travel over 1,000 miles during a year's migrations.

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Migrations are an essential factor in maintenance of the grassland ecosystem. The basic factors involved in migration include specific food and water requirements, environmental factors that affect their availability, environmental stimuli and the animals' response to them. In specific details, of course, these factors vary from species to species, but the basic factors are common to all. Consequently, more can be learned of the phenomenon of migration from an examination in depth of one species than from superficial accounts of the migrations of each species. As described above, the wildebeests appear to be the key ungulate species in Western Masailand, so in the following description of migration the wildebeests are used as the example.

19: Talbot K-4.5 (1954-1962)1954 FL12 Mavel FL12

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P734

Love migration was defined by Bourcière (1955-56) as "seasonal and regular passages between an area where reproduction takes place and a zone in which the winter is spent..." As he points out subsequently, however, migration is not well known in mammals and the examples studied do not necessarily fit the above definition. In wildebeest migration, passage is neither seasonal nor regular, and reproduction takes place and winter is spent often during the migratory movements. The movements of the wildebeests do not fit the definition of true migration. However

19: Talbot E-4,5 (1956-1962)1964 FL12 Mara: FL12

[illegible] annual migrations of caribou, bison, and other animals have been described as "migratory behavior" (Scoresby, 1820; Hutchins, 1909; Gates, 1962). "Migration" is the term in common use to describe wildebeest movements as I shall continue to use it as such, while emphasizing the distinction between the movements of wildebeests and those of true migratory species.

A distinction might be drawn between the large scale migrations of wildebeests, which may cover several hundred miles in a few days, weeks, or months and local, small scale movements. As will be shown below, the only apparent difference between these types of movement is a matter of distance. The factors involved appear identical, so the two will be considered together.

Previous Knowledge and Beliefs about Wildebeest Migrations: It was conceptioned early that the wildebeests in Western Masailand migrated long distances. In 1910 (Kenya Game Dept., 1910) the Chief Game Warden of Kenya noted: " I am inclined to think they [the wildebeest] must go into German Territory and down to the far end of the Southern Reserve...." He based this observation on the fluctuations in numbers of wildebeests in the Mara area. He apparently assumed that the wildebeests traveled in a south-easterly direction, into and through the Rift Valley.